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Faster, Better, Cheaper: An Institutional View

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Fueled by evolving objectives and a need to do more for less, the focus in solar system exploration has shifted to a "faster, better, cheaper" approach featuring focused, technically sophisticated, fast track missions. Over the past several years the Jet Propulsion Laboratory has modified its management practices and its developmental process and tools to implement this approach. This paper will examine the challenges, responses, and early results of this new way of doing business. The focus of this evaluation will be at the institutional rather than the project level. That is, how is the Laboratory managing a suite of many small missions rather than a few big ones?

The current "faster, better, cheaper" missions differ from their flagship predecessors in several significant ways. They are designed to fixed cost targets which are an order of magnitude less than their predecessors. They have focused scientific objectives, and they are usually part of an ongoing program of related missions. They are being developed in about half the time previously allowed. They utilize new technology to reduce mass and improve performance. However, while some risk is inherent in this approach, risks must still be managed to minimize both the likelihood and effects of in-flight failures.

The Laboratory has responded to these challenges by reengineering its design and development process, by providing external sources of tools, technology, and institutional support to individual projects, and by teaming with industry, academic, and international partners. These changes require the innovative use of modern design and development practices and information technologies. They also result in an interdependence and need for resource sharing at many levels - project to project, organization to organization, and nation to nation.

Early results of this transformation are encouraging. Eight missions developed under this paradigm have now or will be launched in 1997-1999, and at the time of this writing all but one have been successful. Significant challenges remain before realizing the full potential of this new way of doing business, but the experience to date suggests that the results justify the effort.